

## IN THE SPECIFICATION

Please replace the paragraphs at page 4, lines 18-22, with the following rewritten paragraphs:

Fig. 11 is a ~~plan schematically illustrating a ninth~~ schematic transverse cross section of an eighth embodiment of the cleaning sheet according to the present invention in the state attached to the head of a cleaning tool (corresponding to Fig. ~~[[1]]~~ 2).

Fig. 12 is a ~~schematic transverse cross section of the cleaning sheet of the plan schematically illustrating a ninth~~ embodiment ~~in the state attached to the head of a~~ of the cleaning tool sheet according to the present invention (corresponding to Fig. ~~[[2]]~~ 1).

Please replace the paragraph at page 5, lines 6-7, with the following rewritten paragraph:

Fig. 22 is a ~~perspective schematically illustrating still yet~~ schematic transverse cross section of another embodiment of the cleaning sheet according to the present invention in the state attached to the head of a cleaning tool (corresponding to Fig. ~~16~~ 17).

Please replace the paragraph at page 5, lines 11-13, with the following rewritten paragraph:

Fig. 24 is a ~~schematic transverse cross section of perspective~~ schematically illustrating still yet another embodiment of the cleaning sheet according to the present invention ~~in the state attached to the head of a cleaning tool~~ (corresponding to Fig. ~~17~~ 14).

Please replace the paragraph beginning at page 9, line 27, through page 10, line 3, with the following rewritten paragraph:

The cleaning sheet 1' of the ~~second~~ third embodiment may have the area of the individual recesses 10 increased by narrowing the strip part 12a lying in the widthwise middle of the wiping sheet 12 as in the cleaning sheet 1' of the fourth embodiment shown in Fig. 6. Because the recesses 10 extend nearer to the middle of the wiping portion 1A than in the third embodiment, the cleaning sheet 1' of the fourth embodiment has an advantage of collecting relatively large dust particles more than the cleaning sheet 1' of the ~~second~~ third embodiment.

Please replace the paragraphs at page 12, lines 12-25, with the following rewritten paragraphs:

Fig. 16 and 17 illustrate the ~~first~~ thirteenth embodiment of the cleaning sheet according to the present invention. Fig. 17 shows the cleaning sheet attached to the head of a cleaning tool. In the figures, numerals ~~[[1]]~~ 1' and 2 indicate the cleaning sheet and the cleaning tool, respectively.

As shown in Fig. 16, the cleaning sheet ~~[[1]]~~ 1' has a rectangular shape in its plan view. The cleaning sheet ~~[[1]]~~ 1' has a wiping portion 1A and fixing portions 1B located on both sides of the wiping portion 1A. In the state attached to the head 20 of the cleaning tool 2 as illustrated in Fig. 17, the wiping portion 1A is disposed on the lower side of the head 20, and the fixing portions 1B are fixed to the upper side of the head 20.

While the cleaning sheet ~~[[1]]~~ 1' is not particularly limited in size and shape, it is preferred that both length L and width W' fall within  $\pm 30\%$  of the length and the width, respectively, of the lower side of the head 20 of the cleaning tool 1. As the area of the head

20 of the cleaning tool 2 increases, the wiping portion 1A of the cleaning sheet ~~[[1]]~~ 1' should have an accordingly increased area.

Please replace the paragraphs beginning at page 12, line, 29, through page 15, line 28, with the following rewritten paragraphs:

The wiping portion 1A, in the state attached to the head 20, consists of a flat part ~~40~~ 110 and tacky sloped parts ~~41~~ 111 rising from the flat part ~~40~~ 110. Both the flat part ~~40~~ 110 and the sloped parts ~~41~~ 111 are disposed substantially along the lower side 21 of the head 20. The angle  $\Theta$  (see Fig. 17) of each sloped part ~~41~~ 111 is preferably  $1^\circ$  to  $60^\circ$ , more preferably  $3^\circ$  to  $45^\circ$ , in view of the size of dust to be trapped and wiping operability.

The area of the flat part ~~40~~ 110 is preferably 30% to 95%, more preferably 50% to 90%, even more preferably 60% to 80%, of the area of the wiping portion 1A, considering the balance between the capability of trapping hair, soil dust, etc. and the capability of trapping relatively large dust particles.

In the present embodiment, the wiping portion 1A has the sloped parts ~~41~~ 111 along all its periphery and obliquely across the flat part ~~40~~ 110. The sloped parts ~~41~~ 111 along the periphery of the wiping portion 1A trap relatively large dust particles as well as hair, soil dust, etc. with their tackiness as the head of the cleaning tool 2 is slid in a usual wiping operation. The cleaning sheet traps dust on not only the peripheral sloped parts but the sloped parts ~~41~~ 111 obliquely across the flat part ~~40~~ 110, thereby having an increased dust collecting capacity.

The sloped parts ~~41~~ 111 have tackiness (tack). A pressure-sensitive adhesive described infra is applied either all over the surface of the sloped parts ~~41~~ 111 or in various patterns (e.g., in dots).

The tack of the sloped parts ~~41~~ 111 is preferably 1 to 30, more preferably 3 to 28, even more preferably 5 to 25, as expressed in terms of ball number (i.e., the nominal diameter of a ball multiplied by 32) in the rolling ball tack test specified in JIS Z0237 14 (test methods of pressure-sensitive adhesive tapes and sheets). Too low tack results in a failure to trap the dust that has not been trapped by the cleaning portion. If the tack is too high, the sloped part can strongly stick to the surface to be cleaned and hardly separate, which impairs the operability.

The pressure-sensitive adhesives which impart tack to the sloped parts ~~41~~ 111 include those of natural rubber type, styrene-butadiene latex type, styrene type, acrylic type or silicone type, thermoplastic rubbers, ABA block copolymers, butyl rubber, polyisobutylene, and vinyl ether polymers. Preferred of them are styrene type or acrylic type pressure-sensitive adhesives for their processability, storage stability, tack duration, and the properties of not transferring when touched.

As shown in Fig. 17, the cleaning sheet 1 is formed of a base sheet ~~42~~ 112 and a bulky member ~~43~~ 113 fixedly adhered to the base sheet ~~42~~ 112.

The base sheet ~~42~~ 112 can be of any material that has been used in a cleaning sheet capable of trapping dust by entanglement in, or adsorption to, the fibers. Examples of the base sheet ~~42~~ 112 include paper, nonwoven fabric, film, pile fabric, and the cleaning sheet disclosed in JP-A-7-184815, para. [0008]-[0018]. Also included is a sheet treated with a liquid containing one or more of oils (such as mineral oils, synthetic oils, and silicone oils) and surface active agents so as to exhibit dust adsorption attributed to the liquid.

The base sheet ~~42~~ 112 preferably has a basis weight of 5 to 100 g/m<sup>2</sup> for operability, processability, stiffness, and flexibility. The base sheet ~~42~~ 112 preferably has a thickness of 0.005 to 3 mm for operability, processability, stiffness, and flexibility.

The bulky member ~~43~~ 113 has a trapezoidal cross section composed of a flat part and sloped parts corresponding to the aforementioned flat part ~~40~~ 110 and sloped parts ~~44~~ 111. The base sheet ~~42~~ 112 is fixed along the faces of these parts to provide the flat part ~~40~~ 110 and the sloped parts ~~44~~ 111.

The bulky member ~~43~~ 113 is preferably of a material that has desired bulk, provides sloping faces corresponding to the sloped parts ~~44~~ 111, and allows for fixing the base sheet ~~42~~ 112 on itself. Such a material includes pulp, nonwoven fabric, paper, film, pile fabrics, sponge, expanded styrene, and rubber sheets. Two or more materials properly selected therefrom may be stacked to make the bulky member ~~43~~ 113.

The thickness T of the bulky member ~~43~~ 113 is decided appropriately according to the size of dust and debris to be caught up. It is preferably 0.5 mm or greater for catching sand or like dust of 0.5 to 1 mm in diameter, or 3 mm or greater for trapping rice grains or like particles of 3 to 5 mm in diameter.

With the head 20 of the cleaning tool 2 applied to a surface to be cleaned (e.g., a floor) and moved to and fro to carry out usual sweeping operation, the cleaning sheet ~~[[1]]~~ 1' of the present embodiment entraps relatively large solid dust particles on the sticky surface of the sloped parts ~~44~~ 111 and catches fine dust (e.g., house dust), hair, etc. on the surface of the flat part ~~40~~ 110 of the wiping portion 1A. Having sloped parts ~~44~~ 111 obliquely across the flat part ~~40~~ 110, the cleaning sheet ~~[[1]]~~ 1' has an increased capacity of collecting relatively large solid dust particles.

Fig. 18 illustrates the ~~second~~ fourteenth embodiment of the cleaning sheet according to the present invention. The parts and members in Fig. 18 that are the same as in the ~~first~~ thirteenth embodiment are given the same numerals or references as in the ~~first~~ thirteenth embodiment, and the description therefor is omitted. The description of the ~~first~~ thirteenth embodiment applies appropriately to those particulars that are not referred to hereunder.

The cleaning sheet 1' of the ~~second~~ fourteenth embodiment shown in Fig. 18 is formed of a single member, a sheet 42 112. The sheet 42 112 has a thick bulky wiping portion 1A and thin fixing portions 1B. The wiping portion 1A has a sloped part 44 111 along its front and rear edges and sloped parts 44 111 obliquely across the flat part 40 110. These sloped parts 44 111 are provided with tackiness. The sloped parts 44 111 can be formed by, for example, embossing the sheet 42 112 or producing the sheet 42 112 by molding process, air-laying process or patternwise fiber accumulation. The sheet 42 112 can be of the same material as the material of the base sheet 42 112 of the ~~first~~ thirteenth embodiment.

The wiping portion 1A has a basis weight of 15 to 1000 g/m<sup>2</sup>, preferably 50 to 300 g/m<sup>2</sup>, and a thickness of 0.5 to 30 mm, preferably 3 to 10 mm. The fixing portions 1B preferably have a basis weight of 5 to 100 g/m<sup>2</sup> and a thickness of 0.005 to 3 mm. The cleaning sheet 1' of the present embodiment produces the following advantages in addition to the advantages of the ~~first~~ thirteenth embodiment. The cleaning sheet 1' is light, flexible, and easier to use in cleaning operation. It is produced through a fewer processing steps at lower cost.

Please replace the paragraph at page 17, lines 7-14, with the following rewritten paragraph:

In another embodiment, the base sheet 11 is shaped to provide a plurality of tags 11a sticking out of the front and the rear edges and serving as fixing portions 1B as in the cleaning sheet 1' illustrated in Fig. 49 24 (in the particular case of Fig. 49 24, two tags 11a for each of the front and the rear edges). The tags 11a are attached to the head to fix the cleaning sheet. The cleaning sheet 1' of this embodiment has the following advantages.

When the wiping sheet 12 is longer than the head of a cleaning tool, waste of the base sheet can be avoided. The fixing portions are prevented from sticking to the recesses 10.

Please replace the paragraph at page 17, lines 23-27, with the following rewritten paragraph:

While the cleaning sheets of the foregoing embodiments are single-sided, the cleaning sheet may be made double-sided reversible as in the embodiment illustrated in Fig. ~~20~~ 19. The cleaning sheet 1' of this embodiment is formed of a single base sheet ~~12~~ 112 with its wiping portion 1A being made thick to bulge both upward and downward so that the cleaning sheet can be reversed after one side is soiled.

Please replace the paragraphs beginning at page 18, line 3, through page 19, line 9, with the following rewritten paragraphs:

The sloped (or curved) part ~~11~~ 111 in the flat part ~~10~~ 110 of the wiping portion 1A is preferably configured to divide the flat part ~~10~~ 110 as in the first embodiment. It is also possible that sloped parts ~~11~~ 111 starting from the front and the rear edges of the flat part ~~10~~ 110 extend inward by a prescribed length but not to divide the flat part ~~10~~ 110 as in the cleaning sheet 1' of the embodiment illustrated in Fig. ~~24~~ 20. This embodiment allows for increasing the sloped area without largely reducing the flat area. As a result, the cleaning sheet exhibits improved balance between the performance of trapping hair and soil dust and the performance of trapping relatively large solid dust particles and surely catches up dust irrespective of the wiping direction.

The cleaning sheet of the present invention preferably has the sloped part ~~11~~ 111 rising from the flat part ~~10~~ 110 along each of the front and the rear edges of the wiping portion 1A. The sloped part ~~11~~ 111 may be replaced with an inwardly curved part ~~11'~~ 111'

rising from the flat part 40 110 as in the cleaning sheet 1' of the embodiment shown in Fig. 23 21. The cleaning sheet 1' of this embodiment surely catches up dust irrespective of the wiping direction. The wiping portion 1A has an increased area of the tacky surface (curved parts 44' 111') while the front and the rear edges of the flat part 40 110 adjacent to both ends of the curved parts 44' 111' secure stability of the wiping operation. Two or more curved parts 44' 111' may be provided along one edge of the wiping portion 1A.

It is preferred that the bulky member 43 113 of the cleaning sheet according to the present invention have faces corresponding to the flat part 40 110 and the sloped parts 44 111 as in the first embodiment. Nevertheless, the bulky member does not always have to have faces corresponding to the sloped parts. For example, the cleaning sheet may have the configuration of the cleaning sheet 1' illustrated in Fig. 24 22, in which the bulky member 43' 113' has a rectangular cross-section. With the cleaning sheet 1' attached to the head 20 of the cleaning tool 2, there are formed shoulders between the head 20 and the bulky member 43' 113', and sloped parts 44 111 are thus created over the shoulders along the edges of the wiping portion 1A. According to this embodiment, the sloped parts 44 111 provide an enhanced cushioning effect, whereby the cleaning sheet 1' traps dust while being deformed in conformity to the uneven contour of a corner between a floor and a door, a threshold or sill, an antiskid, etc. The dust particles once trapped are, not being strongly pressed to an object to be cleaned, prevented from scratching the object.

As in the cleaning sheet 1' of the embodiment shown in Fig. 25 23, the wiping portion may have the sloped or curved part (the sloped part in Fig. 25 23) along a position inward from the front and the rear edges of the head 20. According to this embodiment, relatively large dust particles once trapped onto the sloped part 44 111 are prevented from sticking out of the lower side 21 of the head and thereby prevented from pressing or rubbing an object to be cleaned, which can damage the object or allow the dust to come off the trap.



Please replace the paragraphs at page 19, lines 13-21, with the following rewritten paragraphs:

For example, while in the foregoing embodiments the fixing portions 1B are formed of the base sheet ~~42~~ 112 per se, tackiness may be imparted to the surface of the base sheet so that the base sheet may be removably attached to the head of a cleaning tool.

In another embodiment, the base sheet ~~42~~ 112 is shaped to provide a plurality of tags 12a sticking out of the front and the rear edges to serve as fixing portions 1B as in the cleaning sheet 1' illustrated in Fig. ~~26~~ 25 (in the particular case of Fig. 26, two tags ~~42a~~ 112a' for each of the front and the rear edges). The tags ~~42a~~ 112a' are attached to the head to fix the cleaning sheet 1'. According to this embodiment, the base sheet ~~42~~ 112 can be reduced in area to cut down the material cost.